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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/727,062

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EXAMINER

FICK, ANTHONY D

ART UNIT

PAPER NUMBER

1753

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/727,062	Applicant(s) DESTEESE ET AL.	
	Examiner Anthony Fick	Art Unit 1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 December 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>5/31/05 2/23/06 4/17/06</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: on pages 5 and 8 there are blank underlined spaces within the specification. It is suggested that applicant place the appropriate application number for the copending application that is being referenced.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 14 and 24 through 30 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 02/095707 A1 or WO '707.

WO '707 discloses a thermally feedable transmitter and sensor system as shown in figures 1, 3 and 4.

Regarding claim 14, figure 1 shows a thermoelectric heat converter in communication with means for transmitting thermal energy.

Regarding claims 24 through 30, figure 1 further shows means for storing and discharging electrical energy consisting of a capacitor, 7, at least one sensor powered by the capacitor, 8, at least one transmitter capable of transmitting data gathered by the sensor, 5 and 6, a voltage amplifier, 3, and one microprocessor capable of processing the data and data storage means capable of storing the data, 4.

4. Claims 1 through 11 and 14 through 23 are rejected under 35 U.S.C. 102(e) as being anticipated by Stark et al. (U.S.P.G.Pub 2004/0231714).

Stark discloses a low power thermoelectric generator as shown in figures 1 and 2.

Regarding claim 1, Stark discloses a method of providing electrical energy as shown in figure 1. The figure shows a means for transmitting ambient energy collected in a first temperature region, 20, a thermoelectric device provided with a first and second side, 18, the means for transmitting energy in communication with the first side of the thermoelectric device, arrow 20 pointing to 14, and providing the second side in communication with the second temperature region, 12 in contact with arrow 22.

Regarding claims 2 through 8, Stark discloses the thermoelectric device is comprised of thin film semiconductors assembled in alternating p- and n-type arrays (figure 2 and paragraph 0029). Stark specifically discloses sputter depositing bismuth telluride to create arrays of p-type and n-type thin film elements as in claims 7 and 8 (paragraphs 0023 and 0024). Since the reference to Stark meets the requirements of the choice in claim 2, it is also deemed anticipatory for claims 3 through 6 as these claims only limit the types of materials for the other choices of claim 2.

Regarding claims 9 through 11, figure 1 shows a second means for transmitting energy in the second temperature region, arrow 22, and the means of transmitting selected as transferring energy by conduction.

Regarding claim 14, Stark discloses an apparatus for providing electrical energy as shown in figure 1. The figure shows a means for transmitting ambient energy collected in a first temperature region, 20, a thermoelectric device provided with a first and second side, 18, the means for transmitting energy in communication with the first side of the thermoelectric device, arrow 20 pointing to 14.

Regarding claims 15 through 20, Stark discloses the thermoelectric device is comprised of thin film semiconductors assembled in alternating p- and n-type arrays (figure 2 and paragraph 0029). Stark specifically discloses sputter depositing bismuth telluride to create arrays of p-type and n-type thin film elements as in claim 20 (paragraphs 0023 and 0024). Since the reference to Stark meets the requirements of the choice in claim 15, it is also deemed anticipatory for claims 16 through 19 as these claims only limit the types of materials for the other choices of claim 15.

Regarding claims 21 through 23, figure 1 shows a second means for transmitting energy in the second temperature region, arrow 22, and the means of transmitting selected as transferring energy by conduction.

5. Claims 1 through 4, 7 through 17, 20 through 25 and 28 are rejected under 35 U.S.C. 102(e) as being anticipated by Luo (U.S.P.G.Pub 2004/0094192).

Luo discloses a thermal electric generator as shown in figure 2.

Regarding claim 1, Luo discloses a method of providing electrical energy as shown in figure 1. The figure shows a means for transmitting ambient energy collected in a first temperature region, heat collector, a thermoelectric device provided with a first and second side, thermoelectric device, the means for transmitting energy in communication with the first side of the thermoelectric device, dotted line pointing to thermoelectric device, and providing the second side in communication with the second temperature region, bottom of device in contact with heat sink.

Regarding claims 2 through 4, 7 and 8, Luo discloses the thermoelectric device is comprised of discrete element semiconductors assembled in alternating p- and n-type arrays connected in series (figures 2 and 3). Since the reference to Luo meets the requirements of the choice in claim 2, it is also deemed anticipatory for claims 3, 7 and 8 as these claims only limit the types of materials for the other choices of claim 2.

Regarding claims 9 through 11, figure 1 shows a second means for transmitting energy in the second temperature region, dotted line going to the heat sink, and the means of transmitting selected as transferring energy by conduction.

Regarding claims 12 and 13, Luo discloses a temperature difference of 27 degrees F (15 degrees C converted to F) in paragraph 0029 can produce electrical power.

Regarding claim 14, Luo discloses an apparatus for providing electrical energy as shown in figure 2. The figure shows a means for transmitting ambient energy collected in a first temperature region, 19, a thermoelectric device provided with a first and second side, elements between 121 and 122, the means for transmitting energy in

Art Unit: 1753

communication with the first side of the thermoelectric device, heat collector 19 in thermal contact with 111 and thus 121.

Regarding claims 15 through 17 and 20, Luo discloses the thermoelectric device is comprised of discrete element semiconductors assembled in alternating p- and n-type arrays connected electrically in series (figures 2 and 3). Since the reference to Luo meets the requirements of the choice in claim 15, it is also deemed anticipatory for claims 16 and 20 as these claims only limit the types of materials for the other choices of claim 15.

Regarding claims 21 through 23, figure 1 shows a second means for transmitting energy in the second temperature region, dotted line going to the heat sink, and the means of transmitting selected as transferring energy by conduction.

Regarding claims 24, 25 and 28, figure 1 further shows means for storing electrical energy, the battery, and a voltage amplifier, voltage converter.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 15 through 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 02/095707 A1.

The disclosure of WO '707 is as stated above for claims 14 and 24 through 30.

The difference between WO '707 and the claims is the requirement of a specific thermoelectric device and transmitting means.

Alternating arrays of p-type and n-type discrete semiconductor elements are well known in the art to use as thermoelectric devices, specifically utilizing bismuth telluride as the semiconductor. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize such a device as the thermoelectric device in WO '707. Further, conducting heat away or to the sides of the thermoelectric device is also very well known in the art and would be further obvious to utilize with WO '707.

8. Claims 14 through 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gastouniotis et al. (U.S. 4,940,976) in view of Luo (U.S.P.G.Pub 2004/0094192).

Gastouniotis discloses a sensor device utilizing a thermoelectric generator to power the device as shown in figure 9.

Regarding claim 14, the thermoelectric generator has two sides in communication with means to transmit thermal energy from different temperature regions.

Regarding claims 26, 27, 29 and 30, figure 9 shows a sensor connected to the thermoelectric generator, 16, a transmitter powered by the generator, 62, a microprocessor to process data, 64 and data storage means to store data, 66.

The differences between Gastouniotis and the claims are the requirements of specific thermoelectric devices, transmitting means, power storage and voltage amplifiers.

Luo teaches an apparatus for providing electrical energy as shown in figure 2. The figure shows a means for transmitting ambient energy collected in a first temperature region, 19, a thermoelectric device provided with a first and second side, elements between 121 and 122, the means for transmitting energy in communication with the first side of the thermoelectric device, heat collector 19 in thermal contact with 111 and thus 121.

Regarding claims 15 through 17 and 20, Luo teaches the thermoelectric device is comprised of discrete element semiconductors assembled in alternating p- and n-type arrays connected electrically in series (figures 2 and 3).

Regarding claims 21 through 23, figure 1 shows a second means for transmitting energy in the second temperature region, dotted line going to the heat sink, and the means of transmitting selected as transferring energy by conduction.

Regarding claims 24, 25 and 28, figure 1 further shows means for storing electrical energy, the battery, and a voltage amplifier, voltage converter.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize a thermoelectric device such as Luo as the thermoelectric generator within Gastouniotis because it is well known in the art to use such devices as thermoelectric generators. It would have been further obvious to one of ordinary skill in the art at the time the invention was made to include the battery and voltage amplifier of Luo with the system of Gastouniotis because the addition of the battery allows the system to run even when the temperature gradient is diminished, and the use of the battery is well known in the art to increase the usefulness of thermoelectric generators.

Art Unit: 1753


Because Gastouniotis and Luo are concerned with thermoelectric generators, one would have a reasonable expectation of success from the combination. Thus the combination meets the claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony Fick whose telephone number is (571) 272-6393. The examiner can normally be reached on Monday - Friday 7 AM to 4 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Anthony Fick *ADF*
AU 1753
June 8, 2007


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